REVISITING THE FALL 2001 PRODUCTION – Rates and Efficiency

Giacomo BRUNO

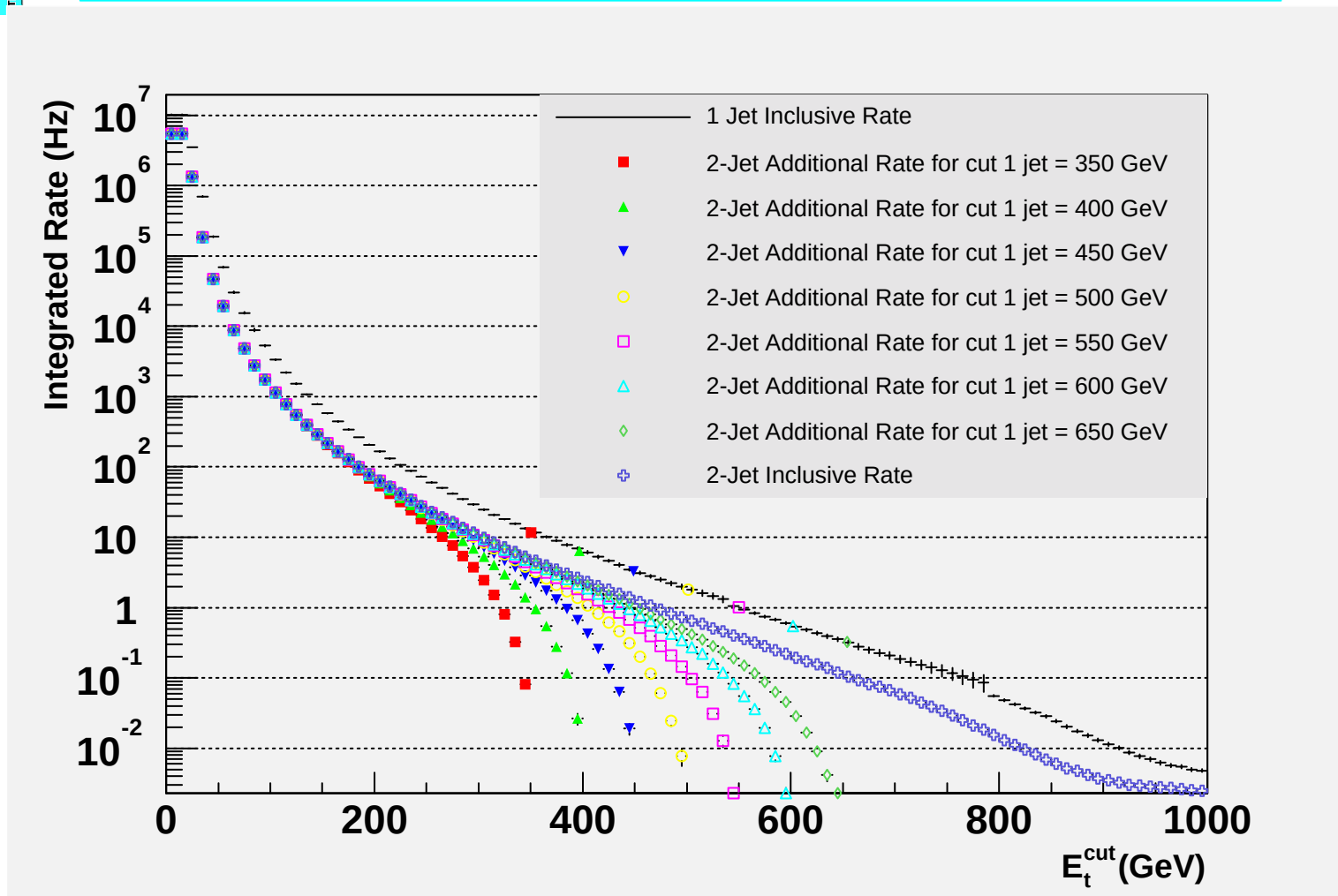
CERN-EP Division

- Cumulative HLT trigger rates for 1,2 and 3 jet Trigger
- Trigger threshold tables
- Trigger efficiency on Z'(700)->2 jet
- Rate vs Efficiency
- Conclusions

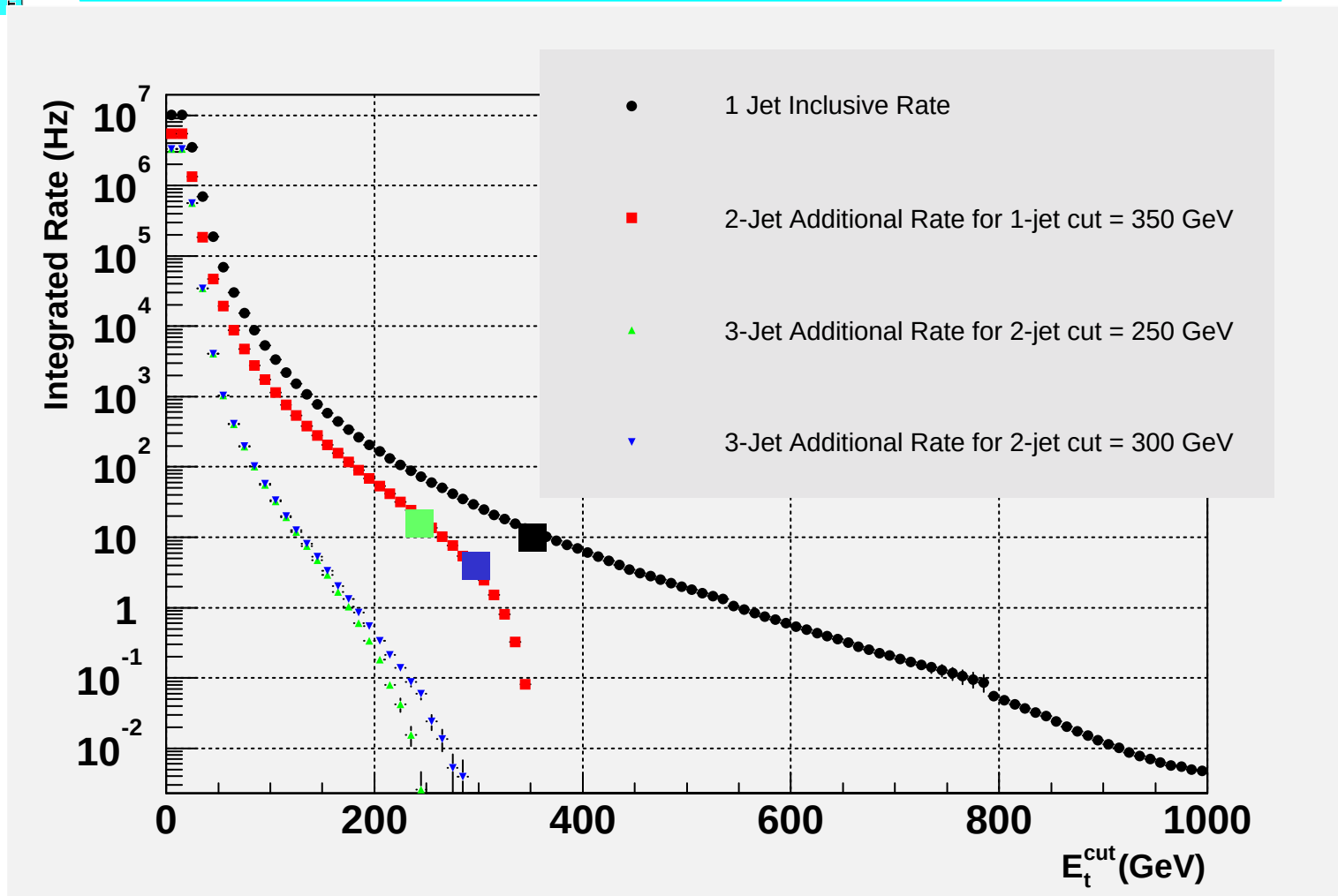
The analysis

- Fall 2001 Production
  - HLT sample + Z'(700)->2 j
  - Pile-up and rates for $L=2x10^{33}cm^{-2}s^{-1}$
  - Jet cone size =0.5
  - Corrected jet energy scale
  - "Branson Weight" method for rates
  - Nominal thresholds

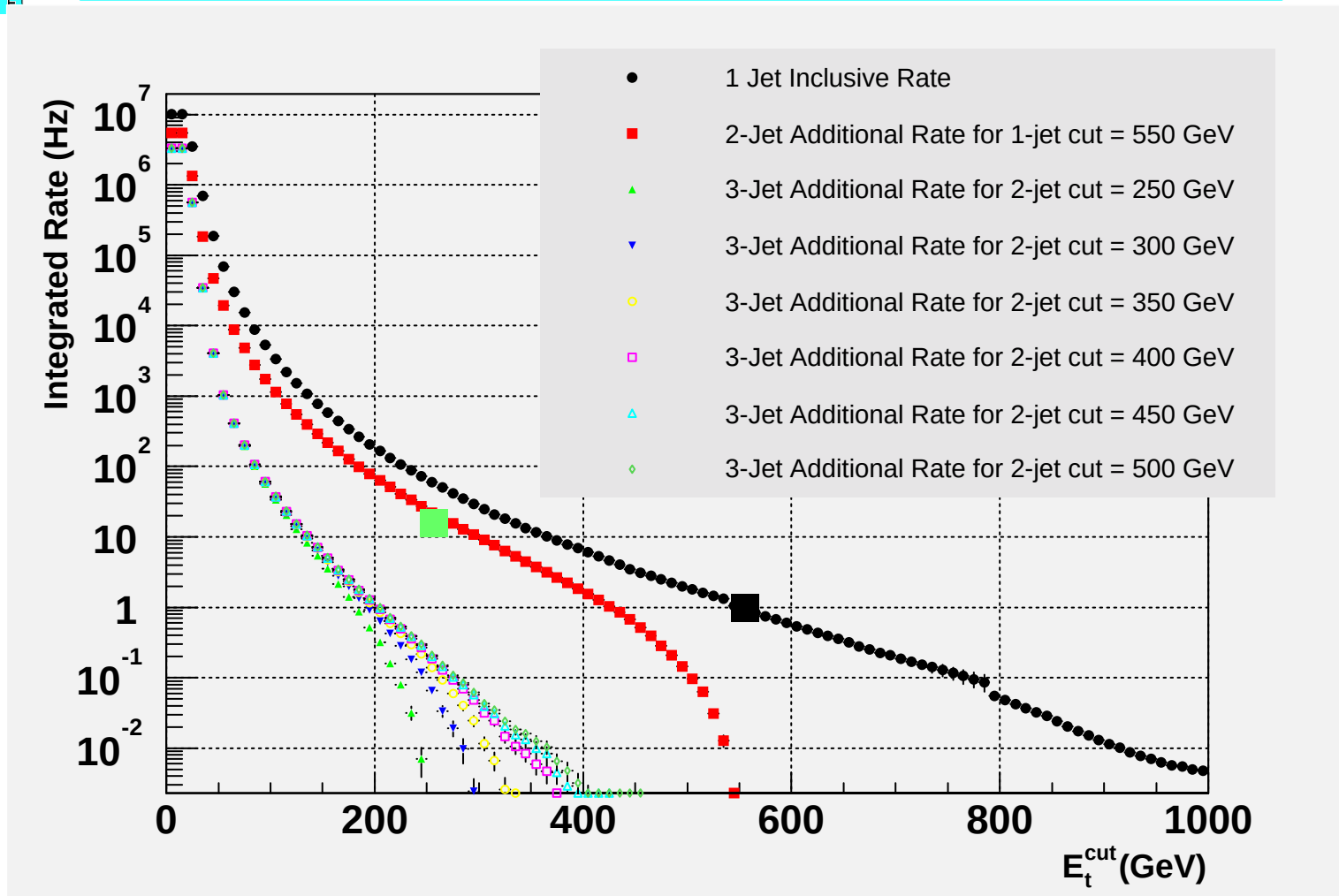
Single and (Additional) Di-jet Rates



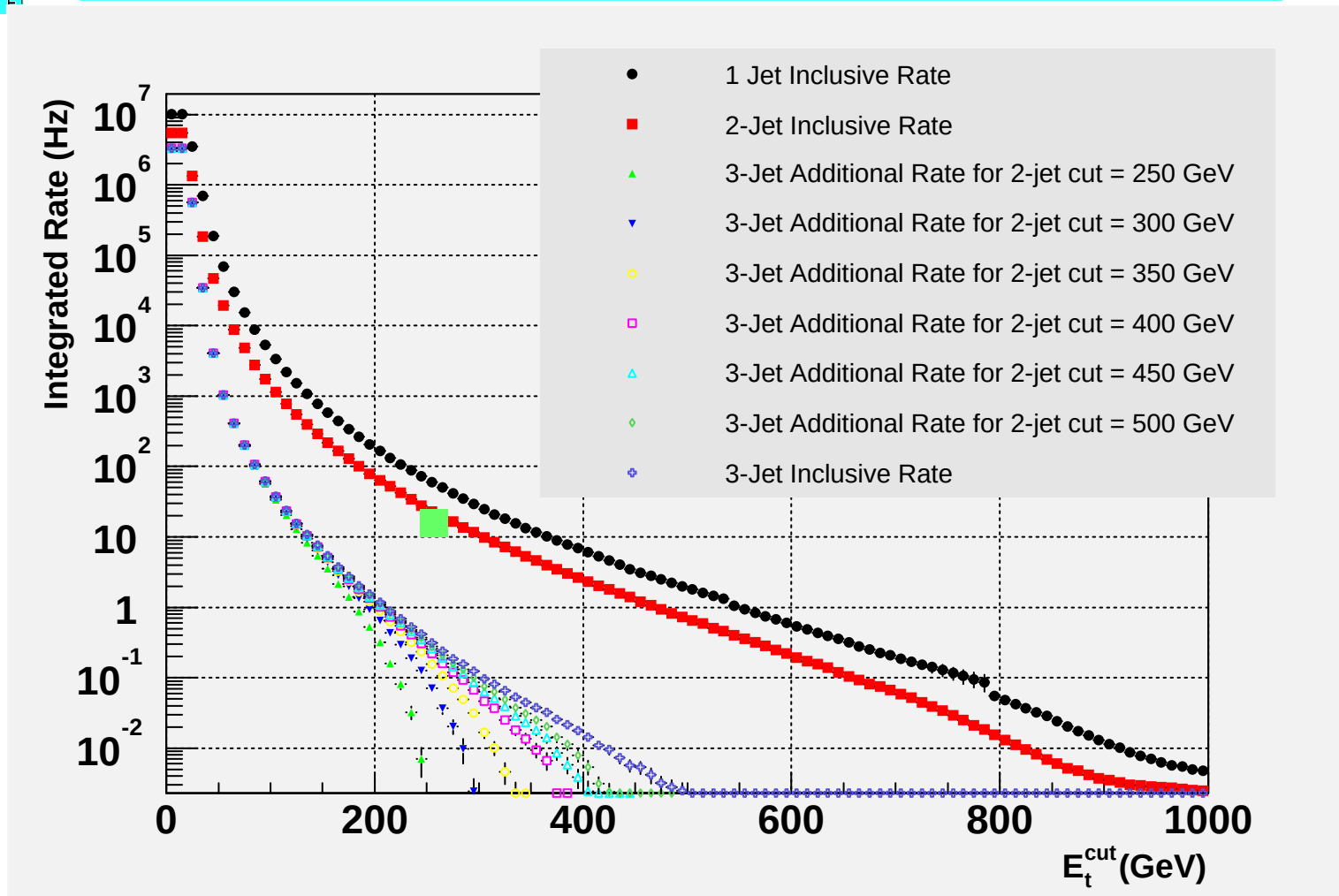
3-jet Trigger Additional Rate (1-jet cut=350 GeV)



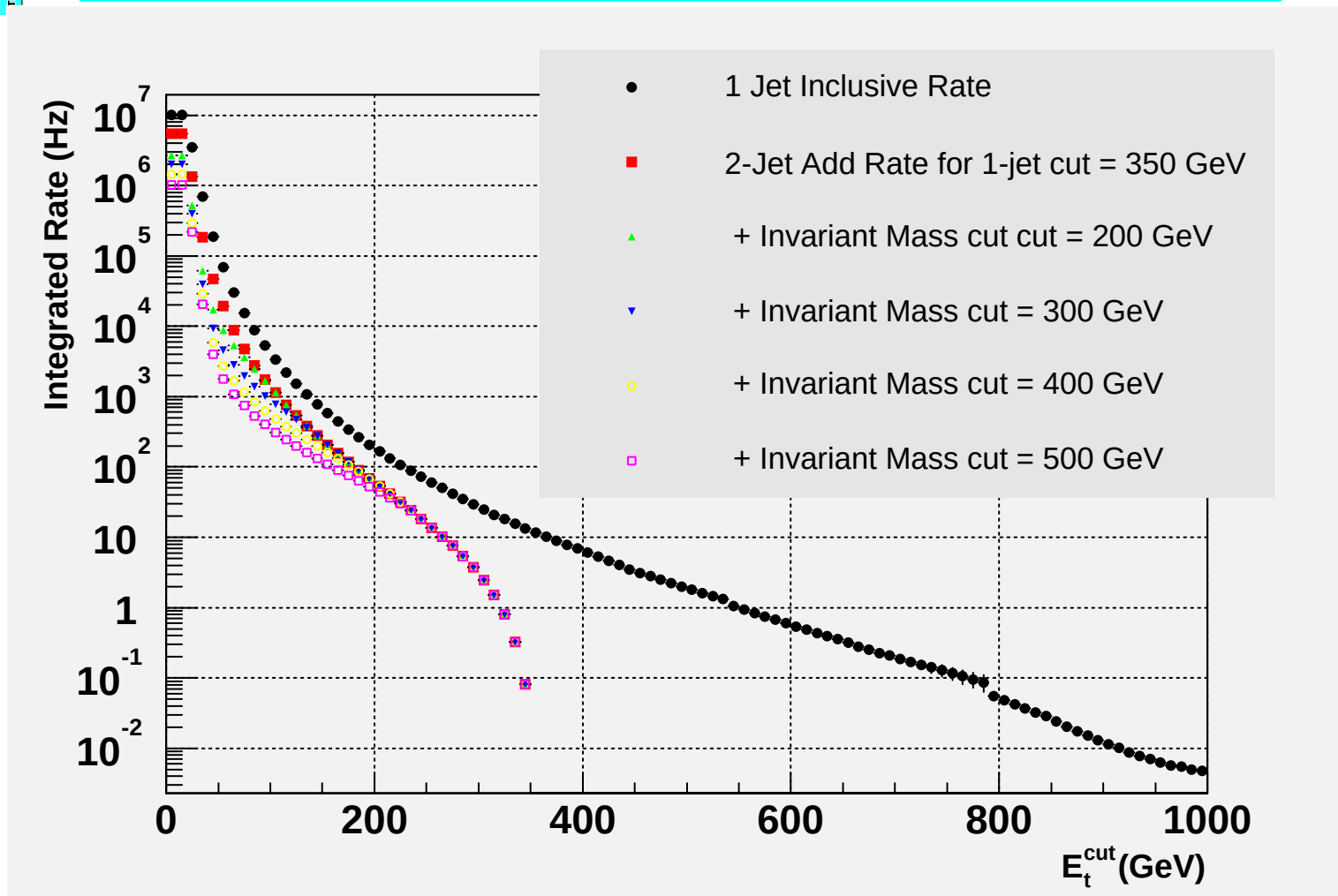
3-jet Trigger Additional Rate (1-jet cut=550 GeV)



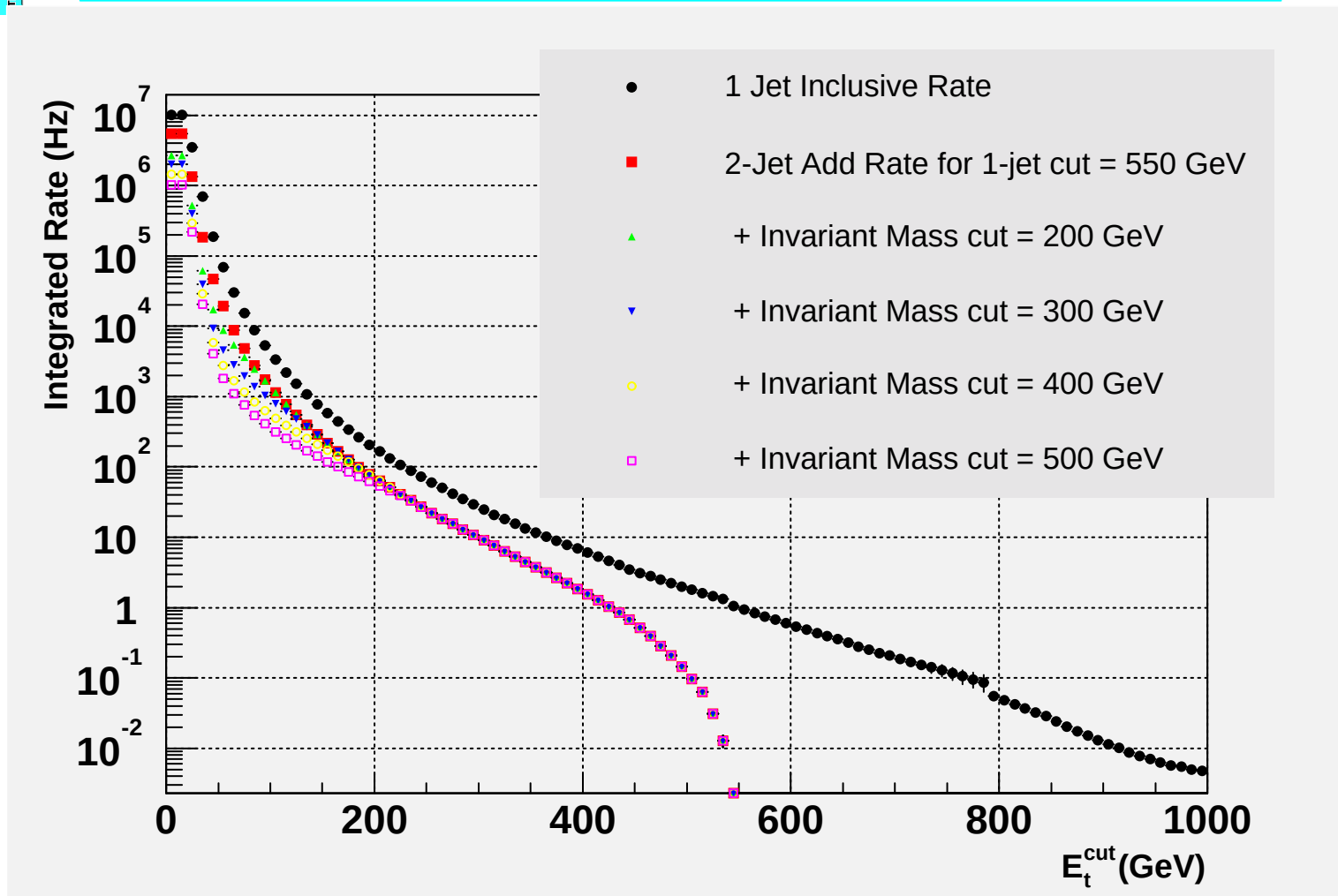
3-jet Trigger Additional Rate (no 1-jet trigger)



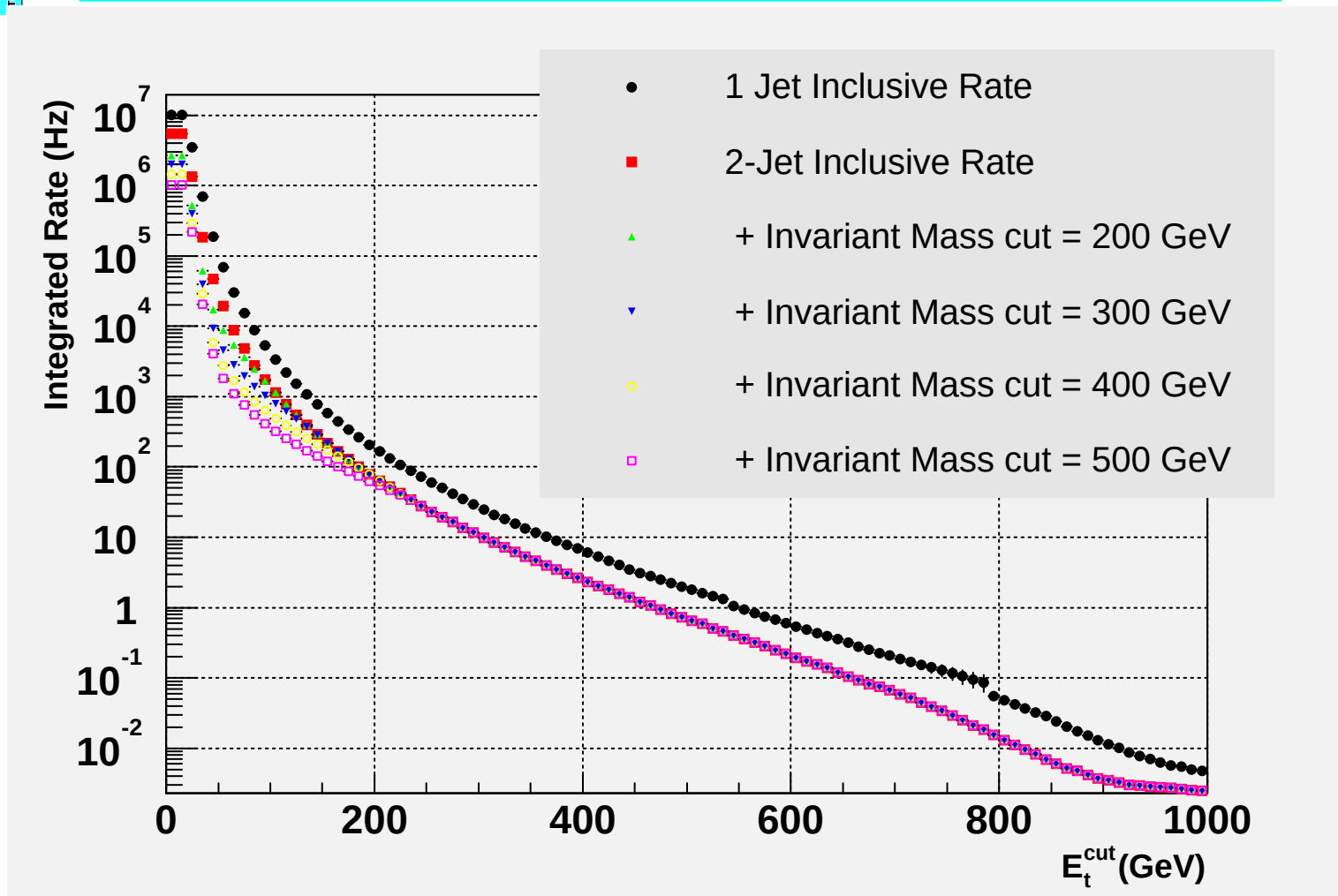
2-Jet Additional Rate with cut on Invariant Mass(1-jet cut=350 GeV)



2-Jet Additional Rate with cut on Invariant Mass(1-jet cut=550 GeV)



2-Jet Additional Rate with cut on Invariant Mass(no 1-jet trigger)



Trigger table (1)

1 jet cut=550 GeV ; Rate = 0.94 ± 0.03 Hz			
2 jet cut (GeV)	2 jet rate (Hz)	3 jet cut (GeV)	3 jet rate (Hz)
		130	9.5 ± 0.3
300	9.0 ± 0.1	190	0.92 ± 0.04
		240	0.12 ± 0.01
		130	10.3 ± 0.3
400	1.53 ± 0.03	190	1.3 ± 0.03
		260	0.13 ± 0.01
		130	10.5 ± 0.3
500	0.1 ± 0.01	190	1.3 ± 0.03
		260	0.15 ± 0.01

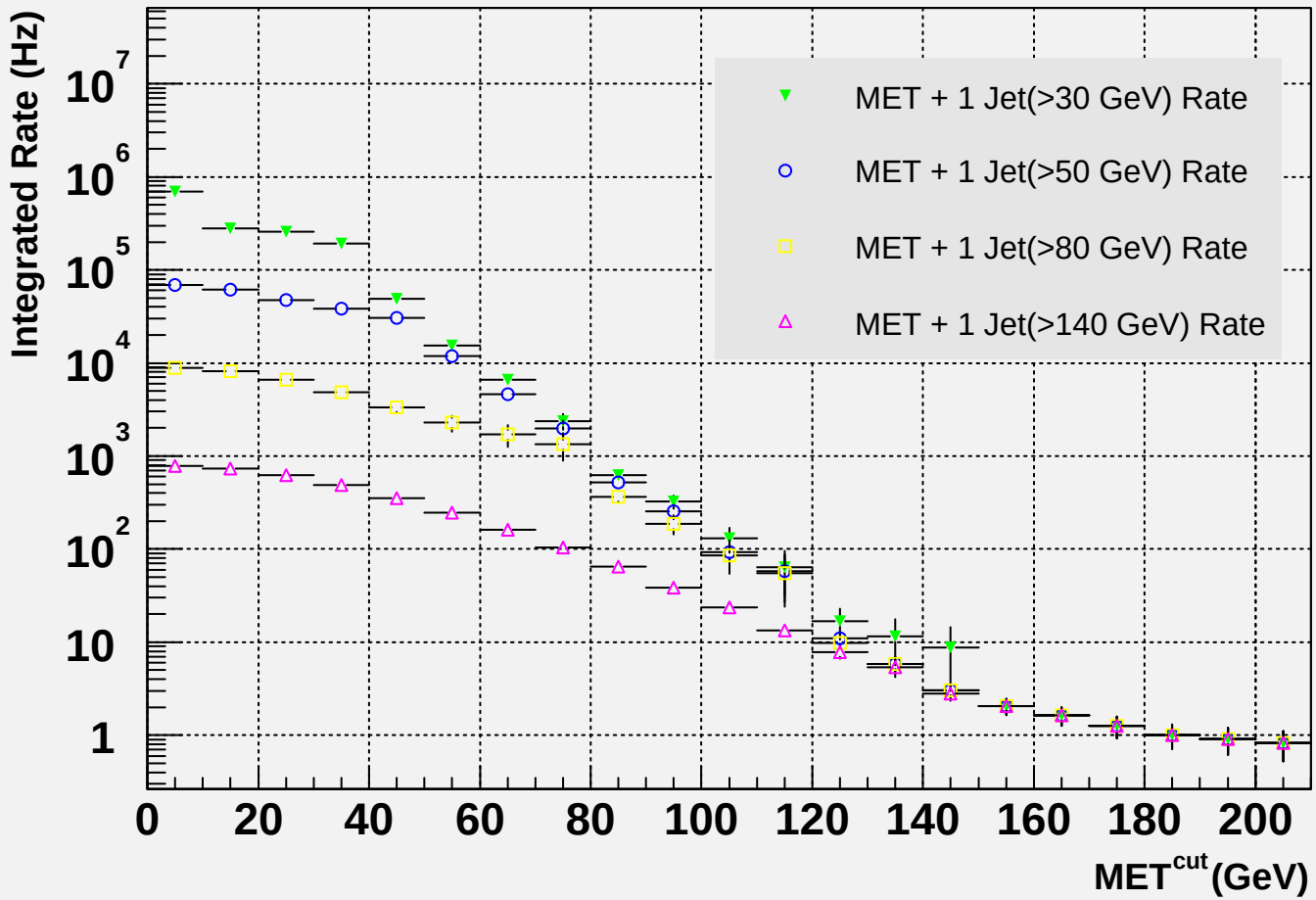
Trigger table (2)

1 jet cut=450 GeV ; Rate = 3.1 ± 0.1 Hz			
2 jet cut (GeV)	2 jet rate (Hz)	3 jet cut (GeV)	3 jet rate (Hz)
		140	6.2 ± 0.2
300	7.3 ± 0.1	170	1.9 ± 0.1
		200	0.57 ± 0.03
		140	6.6 ± 0.2
350	2.3 ± 0.05	170	2.1 ± 0.1
		200	0.72 ± 0.03
		140	6.7 ± 0.2
400	0.42 ± 0.02	170	2.1 ± 0.01
		260	0.77 ± 0.03

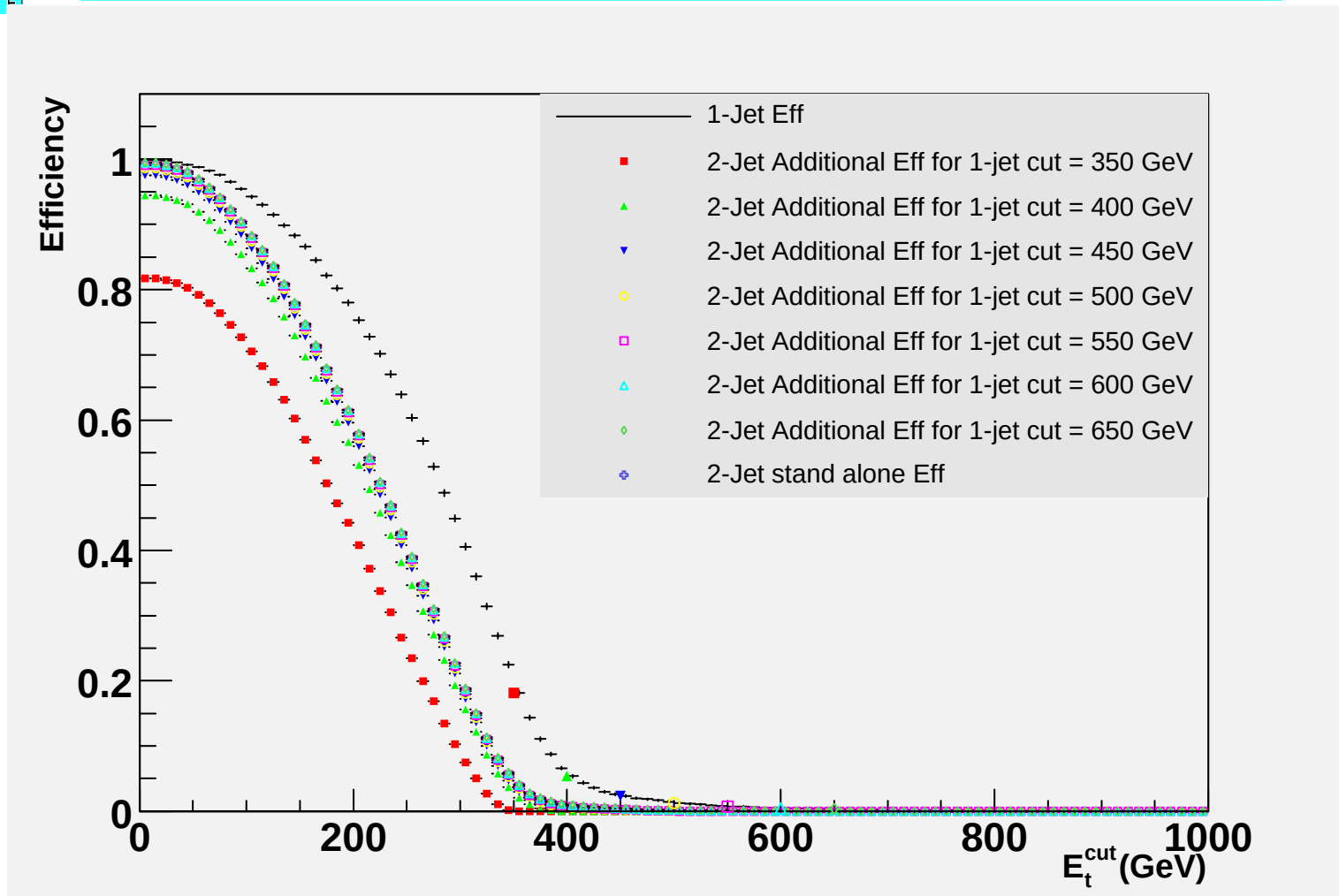
Trigger table (3)

1 jet cut=350 GeV ; Rate = 11.6 ± 0.3 Hz			
2 jet cut (GeV)	2 jet rate (Hz)	3 jet cut (GeV)	3 jet rate (Hz)
		140	4.7 ± 0.2
250	13.7 ± 0.2	170	1.0 ± 0.1
		200	0.18 ± 0.02
		140	5.3 ± 0.2
300	2.4 ± 0.1	170	1.3 ± 0.1
		200	0.33 ± 0.03

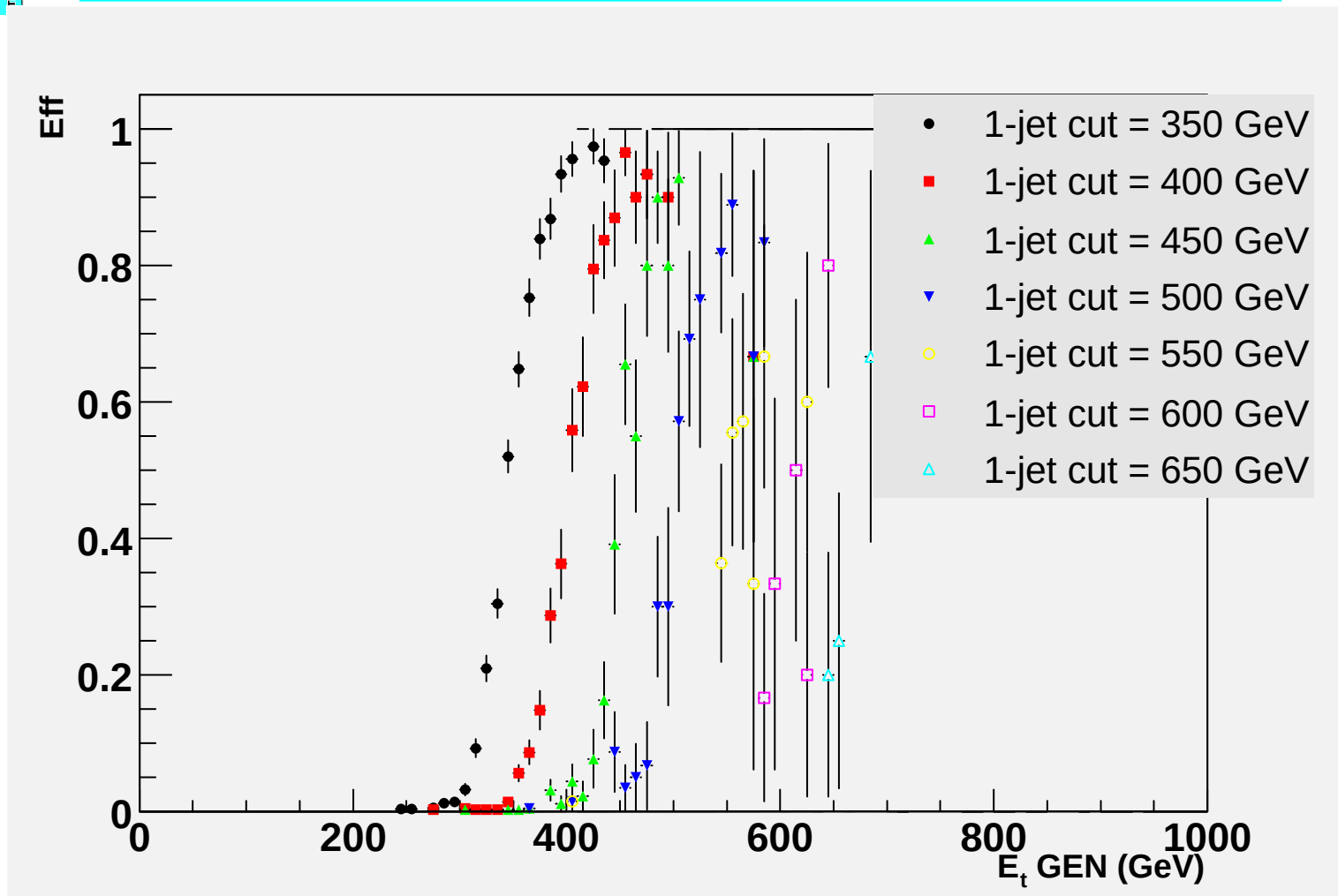
MET+1 Jet Trigger Rate



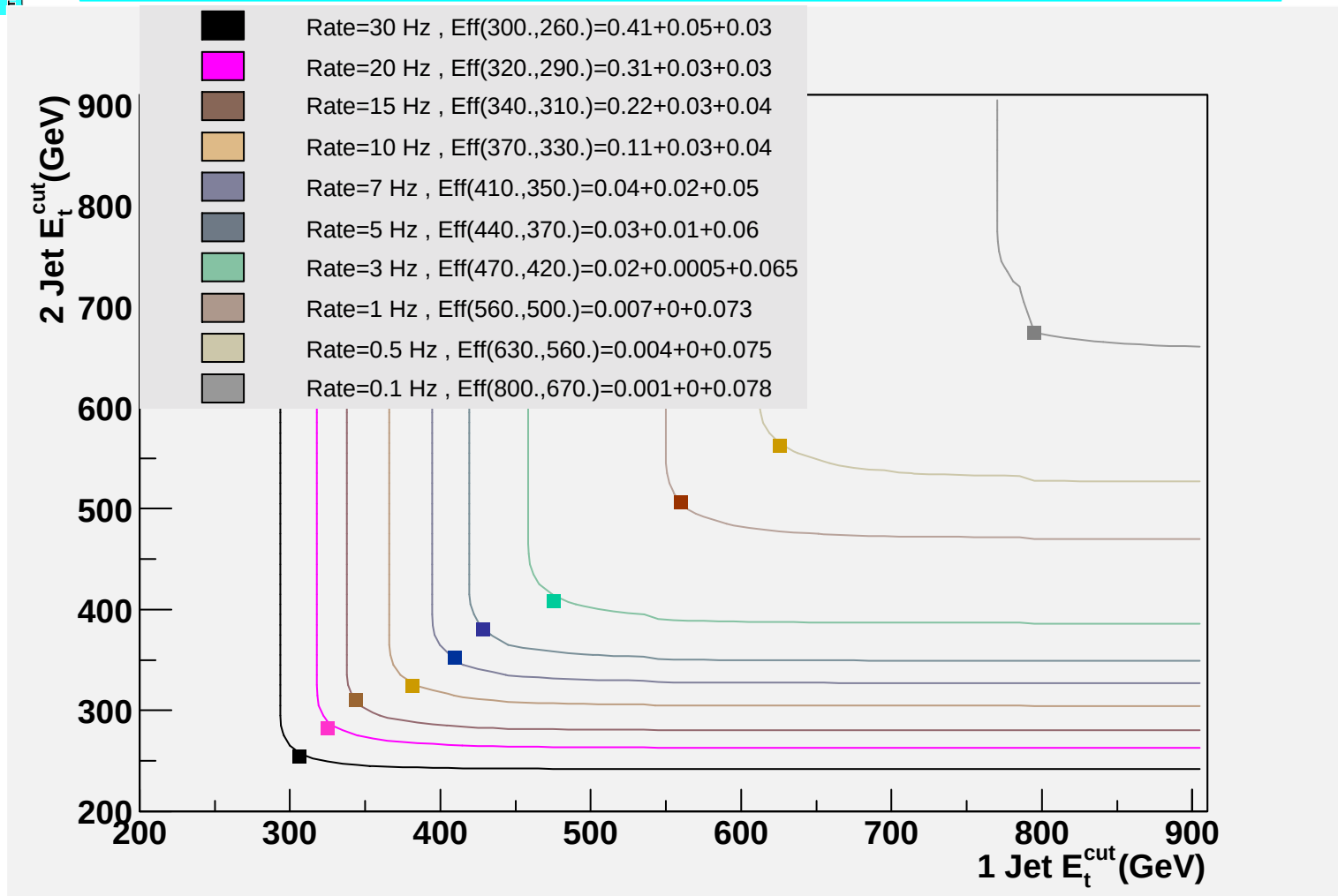
Efficiency on Z'(700) for 1-jet and 2-jet trigger



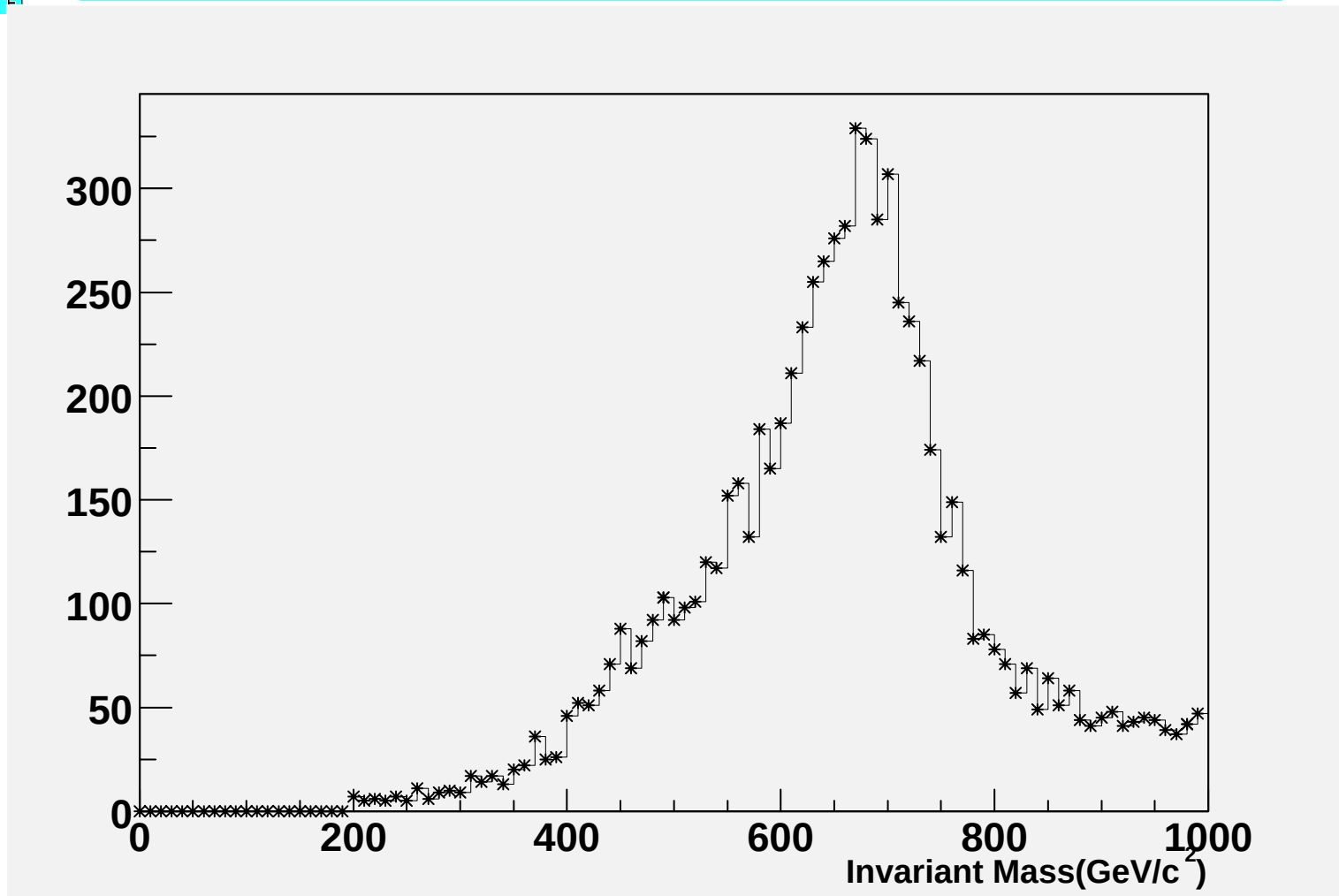
Efficiency Turn-on curves on Z'(700) for 1-jet trigger



Rate vs Efficiency for the 1 and 2-jet trigger



Reconstructed Invariant Mass



Conclusions

- Inclusive trigger rates agree with previous results.
- Complete trigger tables have been shown.
- My MET+1Jet rates are higher than what shown in the past.
- A cut on the invariant mass does not look useful at the interesting thresholds
- Z'(700) looks quite critical in the region of interest

- PLANS: obtain these results on the new production.

Single and (Additional) Di-jet Rates (jet cone=0.7)